

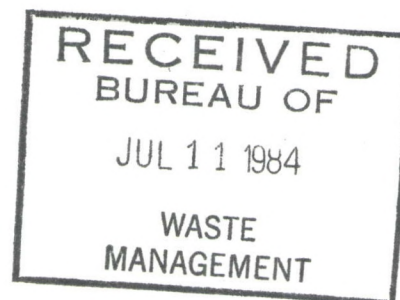
DEPARTMENT OF HEALTH AND ENVIRONMENT

Barbara J. Sabol, Secretary

Forbes Field
Topeka, Kansas 66620
913-862-9360



5 July 1984



Mr. Kent Houser
Manager of Environmental Control
Abbott Laboratories
6601 S. 71st St. West
Wichita, Kansas 67231

Re: Resource Conservation and Recovery Act (RCRA)
Compliance Inspection

Mr. Houser:

On 30 March 1984, and 29 March 1984, a RCRA inspection of your facility was conducted by this department to determine compliance with state and federal regulations concerning hazardous waste.

The inspection identified the following items not in compliance with state and federal regulations concerning generators of hazardous waste:

Your contingency plan did not include: arrangements made with emergency response authorities, home addresses of the designated emergency coordinators, locations of all emergency equipment at the facility, or an evacuation plan for the facility. All these items are required by 40 CFR 265 subpart D.

Your closure plan did not include: a description of steps necessary to completely close the facility (the drum storage area was not sufficiently addressed), an estimate of the maximum inventory of wastes in storage at any given time during the facility life, a description of the steps needed to decontaminate facility equipment at the time of closure, or a schedule for final closure. All these items are required under 40 CFR 265 subpart G.

Your waste analysis plan did not include: parameters for which each hazardous waste will be analyzed and rationale for the selection of these parameters, sampling methods used to obtain samples, and frequency with which the initial analysis will be reviewed or repeated to ensure the analysis is current. These items are required under 40 CFR 265.13.



R00000875
RCRA Records Center

Your waste incinerator filters are to be considered hazardous waste if the filters are ever allowed to come in contact with the various listed hazardous wastes generated at your facility (i.e. methanol, methylene chloride, toluene). This is based upon 40 CFR 261.3(a)(2)(iv).

Sufficient aisle space was not maintained to enable thorough inspection of the drums of hazardous waste in storage or unobstructed movement of personnel and equipment, as required by 40 CFR 264.35.

Our department will expect these deficiencies to be taken care of by August 20, 1984.

Our department also strongly recommends that you work down your backlog of drums (both those containing materials to be reprocessed and those containing materials to be incinerated), in your drum storage area, to a level where there is sufficient aisle space to allow inspections of the individual containers and expeditious measures to control any leakage from the containers. Also, we recommend that prompt and thorough measures be taken to cleanup any spillage or leakage of chemicals both in and around your drum storage area and along the transfer route to the incinerator. On my inspection, I noted at least three separate areas of leakage in the drum storage area. At the time, the drums were placed so tightly together it was impossible to judge which of the containers were leaking. Also, I noted a large area of spillage (approx. 10 feet by 10 feet) on the ground just outside the incinerator building.

While the drums containing materials to be reprocessed and those containing non-listed waste to be incinerated are not regulated under RCRA, our department feels they should be handled in a manner appropriate to prevent a threat to groundwater or surface waters of the state. Our authority for making the recommendations found in the previous paragraph, stems from KSA 65-164.

Your cooperation with the Hazardous Waste Management Program is appreciated. If you have questions concerning the inspection, please call me at 316-265-3181.

Sincerely,

DIVISION OF ENVIRONMENT

Dale T. Stuckey
Dale T. Stuckey
Field Services Section
Bureau of Waste Management

DTS:cjl

cc: Thomas Gross

DRAFT

DATE _____

FACT SHEET

CLASS I WELLS

I. Background Information

1. Owner/Operator: Air Products and Chemicals, Inc.

Address: Box 538
Allentown, PA 18105

2. The application for permit pertains to a deep disposal well located in Northwest Quarter of the Southeast Quarter of the Northeast Quarter (NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 33, Township 28 South, Range 1 East/West, more particularly described as a point 3530 feet North and 1050 feet West from the Southeast corner of said section, Sedgwick County, Kansas.

II. Injection Details

1. Injection is to be made into the Arbuckle formation from a top depth of 4000 feet to a bottom depth of 4700 feet.
2. Disposal will be by means of gravity flow/a wellhead pressure of 0 psi.
3. The estimated minimum rate of injection is 0 gallons per day. The estimated maximum rate of injection is 533,000 gallons per day.

III. Description of Wastes and Fluids to be Injected.

The wastewater proposed for injection is from manufacturing activities and stormwater runoff. The process wastewater is generated by batch operations producing organic chemicals. The batch nature of these processes results in wide variations in the wastewater composition. The wastewater contains various reactants, products, additives and byproducts associated with the processes. The major constituents are amines, cyclohexanol, cyclohexanone and acetates. The waste stream does not exhibit any hazardous waste characteristics described in 40 CFR 261 Subpart C.

IV. Description of Disposal Formation

The Arbuckle Formation is a sequence of dolomites, cherty to sandy in part, cherty limestones, and occasional sandstone units which are extensively used for disposal of oil field brine and treated industrial wastewater in Kansas. In South Central Sedgwick County, the Arbuckle is approximately 800 feet in thickness and the top of the sequence is encountered at a depth of 4,000 feet. The Arbuckle Formation is capable of receiving large quantities of fluid without use of wellhead pressure due to its porous and permeable nature.

V. Chemical Characteristics of Disposal Formation Waters

The connate disposal formation waters in the vicinity of the well exceed the "usable" water standards of 10,000 mg/l total dissolved solids and, therefore, the Arbuckle formation need not be protected from the injection of waste fluids.

VI. Construction, Monitoring, and Operation of Well

All construction, monitoring, and operation of this well will meet the requirements that apply to Class I injection wells under the Kansas Underground Injection Control Regulations, K.A.R. 28-46-1 through 28-46-42. Prior to initial injection of fluids, the applicant must agree to all conditions stated in the final permit as required by the Department.

VII. Basis for Draft Permit Conditions

1. General

- (a) Applicable federal laws
- (b) Applicable federal regulations
- (c) Applicable state statutes
- (d) Applicable state regulations
- (e) Applicable state and federal waste quality standards
- (f) Technical guidance and reference documents
- (g) Permit application and supporting documents
- (h) Technical expertise and professional judgment of permit writers and department technical staff
- (i) Technical input and consultation with federal, state and local agencies and representatives of citizen groups

2. Specific

The following specific documents were used to draft permit limitations, conditions, operating procedures, monitoring and reporting requirements.

- (a) Clean Water Act (Public Law 95-217)
- (b) Resource Conservation and Recovery Act (Public Law 94-580)
- (c) Safe Drinking Water Act
- (d) Toxic Substances Control Act (Public Law 94-469)
- (e) 40 CFR Parts 122-125, 144-147, 233, 251, 260-271 and Guidance 1425
- (f) K.S.A. Chapter 65
- (g) House Bill No. 2740
- (h) Hazardous Waste Management Articles 31 and 34
- (i) Kansas UIC Regulations 28-46-1 through 28-46-42
- (j) Water Quality Criteria 1972 EPA March 1973
- (k) Drinking Water Standards (Federal Register December 24, 1975)
- (l) Quality Criteria for Water EPA July 1976
- (m) Clean Water Act

- (n) Suggested No Adverse Response Levels (SNARLS)
- (o) EPA-600/2-77-240, An Introduction to the Technology of Subsurface Wastewater Injection
- (p) Type Logs of Kansas published by the Kansas Geological Society
- (q) U.S.G.S. Professional Paper 708, Groundwater Hydraulics
- (r) Freeze and Cherry - Groundwater
- (s) Davis and DeWiest - Hydrogeology
- (t) Applicable bulletins and other related publications by the Kansas Geological Survey
- (u) Applicable publications by the U.S. Geological Survey

VIII. Evidence of Financial Responsibility

A performance bond executed November 23, 1983 in the sum of \$25,000 provides the financial assurance necessary to insure that the well, when abandoned, will be properly plugged. Bonding requirements were developed using the following estimates:

LABOR

Drill rig, crew, equipment and supplies; 10 days at \$1,500 per day	\$15,000
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MATERIALS

Backfill, in place 465 cubic feet at \$8 per cubic foot	3,720
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Cement, in place 120 cubic feet at \$15 per cubic foot	1,800
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Drilling mud, in place 243 barrels at \$15 per barrel	3,645
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Miscellaneous	<u>835</u>
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TOTAL	\$25,000
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IX. Permit Outline

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Facility Description	1
Inject Limitations and Monitoring Requirements	2
Standard Conditions	2
Schedule of Compliance	2
Other Requirements	3

X. Final Determination Procedures

In anticipation of public interest and a desire to comment, the agency has set January 7, 1985 as the public hearing date for this draft permit.

XI. Additional information may be obtained from:

E. Jean Underwood
Kansas Department of Health and Environment
Forbes Field, Bldg. 740
Topeka, Kansas 66620

14-H

BRIEF REVIEW OF AIR PRODUCTS AND CHEMICALS, INC. INJECTION WELLS

This review describes applications for Underground Injection Control Permits to construct two injection wells and to inject process wastewater originating from manufacturing activities in to Air Products and Chemicals, Inc., Disposal Well No's. 1 and 2. Disposal Well No. 1 is located in the Northwest Quarter of the Southeast Quarter of the Northeast Quarter ($NW\frac{1}{4} SE\frac{1}{4} NE\frac{1}{4}$), more particularly described as a point 3530 feet North and 1050 feet West from the Southeast corner of the section, and Disposal Well No. 2 is located in the Northeast Quarter of the Southwest Quarter of the Northeast Quarter ($NE\frac{1}{4} SW\frac{1}{4} NE\frac{1}{4}$), more particularly described as a point 3530 feet North and 1450 feet West from the Southeast corner of the section, both in Section 33, Township 28 South, Range 1 West, Sedgwick County, Kansas.

The Air Products and Chemicals, Inc., applications for the injection wells estimate that a minimum of 0 gallons per day up to a maximum of 533,000 gallons per day of non-hazardous fluids will be disposed into each well under gravity head into the Arbuckle Formation at a depth of approximately 4,000 feet below ground surface.

The Arbuckle Formation is a sequence of dolomites, cherty to sandy in part, cherty limestones, and occasional sandstone units which are extensively used for disposal of oil field brine and treated industrial wastewater in Kansas. In South Central Sedgwick County, the Arbuckle is approximately 800 feet in thickness and the top of the sequence is encountered at a depth of 4,000 feet. The Arbuckle Formation is capable of receiving large quantities of fluid without use of wellhead pressure due to its porous and permeable nature.

The fluids that are to be injected into the deep wells include process wastewater originating from manufacturing activities. The wastes to be disposed of are classified as non-hazardous by definition in the Resource Conservation and Recovery Act of 1976.

All injection well casings are to be cemented in place, bottom to top, except for the injection tubing which is to be set. The disposal zone is to be open hole completion from 4,020 to 4,700 feet. The connate waters in the Arbuckle Formation in the vicinity of the wells will be determined to be chemically compatible with the wastes to be injected. The connate Arbuckle Formation waters in the vicinity of these wells exceed the "usable" water standards of 10,000 mg/l total dissolved solids and, therefore, the Arbuckle Formation need not be protected from the injection of waste fluids. There is no oil production or brine injection into the Arbuckle Formation within the half-mile area of review.

All construction, monitoring, and operation of these wells will meet the requirements that apply to Class I Injection Control Regulations, K.A.R. 28-46-1 through 28-46-42. Prior to initial injection of fluids, the applicant must agree to all conditions stated in the final permits as required by the Department. The Department is considering issuing the permits under the authority set out in K.S.A. 65-165, 65-166, and 65-171d.

DRAFT
DATE _____

Kansas Permit Number:

**KANSAS UNDERGROUND INJECTION
CONTROL PERMIT**

Pursuant to the provisions of Kansas Statutes Annotated (65-164, 65-165, 65-166, 65-170g and 65-171d),

Owner: Air Products Manufacturing Corporation

Owner's Address: Box 538
Allentown, Pennsylvania 18105

Telephone No.: 215-398-4911/8709

Facility Name: Air Products and Chemicals, Inc.

Facility Location: Wichita, Kansas

Well Location: NW SE NE 33-T28S-R1W
Sedgwick County (Well No. 1)

Receiving Formation: Arbuckle

is authorized to inject liquid wastes from this facility, in accordance to the construction and monitoring requirements as set forth herein.

This permit shall become effective _____, will supersede all previous permits and/or agreements in effect between the Kansas Department of Health and Environment and the permittee, and will expire _____. The term of this permit shall not exceed ten years.

FACILITY DESCRIPTION:

Chemical manufacturer producing organic chemicals. Waste stream contains various reactants, products, additives, and by-products associated with the processes. The major constituents are amines, cyclohexanol, cyclohexanone and acetates. The waste stream does not exhibit any hazardous waste characteristics described in 40 CFR Subpart C.

Secretary, Kansas Department of
Health and Environment

Date

Kansas Permit Number:

INJECT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to inject industrial waste water or groundwater as specified in the application for this permit. The injection fluid concentrations and the rate of injection shall become effective on the date(s) specified herein. Such injection in the disposal well shall be controlled, limited and monitored by the permittee as specified. Monitoring reports shall be submitted monthly for each well.

	<u>INJECTION LIMITATIONS</u>	<u>MONITORING REQUIREMENTS</u>	
<u>Injection Parameter(s)</u>			
pH	2-12.5	Weekly	(Quarterly Average and maximum for concentrations and quantities)
Total Organic Carbon	35,000 mg/l	Weekly	"
Total Organic Halogens	10 mg/l	Weekly	"
Chloride	No limit	Weekly	"
Temperature	Ambient	Daily	"

STANDARD CONDITIONS

In addition to the specified conditions stated herein, the permittee shall comply with the attachment Part I.

SCHEDULE OF COMPLIANCE

All reports are to be submitted no later than 14 days following the last day of the month.

Kansas Permit Number:

OTHER REQUIREMENTS

I. CONSTRUCTION REQUIREMENTS

- A. Borehole, casing, tubing, and cement specifications for disposal well. (Surface casing and protective casing must be new and cemented bottom to top by circulating.)

<u>Bore Hole Size and Interval</u>	<u>Casing or Tubing Size and Material</u>	<u>Weight lbs/ft</u>	<u>Casing Seat Depth</u>	<u>Type of Cement</u>	<u>No. of Sacks of Cement</u>
20 in 0-350 ft	16 in steel	65	350	A	215 (est)
12-1/2 in 350-4000 ft	8-1/5 in steel	32	4000 ft	A	745 (est)
7-3/8 in 0-4020 ft	5-1/2 in steel	14	4020 ft	--	--

- B. Corrosion Protection: Diesel fuel in annulus between 5-1/2 inch tubing string and 8-1/2 inch long casing string. Annulus pressure: 150-200 psi.
- C. Spill prevention and containment plan to be employed during the operation of the disposal well:
1. A study is being conducted to determine if any surface retention facilities are needed.
 2. A surge tank may be needed to equalize flow during periods of high stormwater runoff.
 3. Proposed disposal well #2 will serve as an alternate well in the event of a well malfunction.
- D. This permit shall not become fully effective until the following have been received by the department:
1. A complete geologic log of the well. (May be gamma ray-neutron, electric log, or other descriptive log; not a driller's log.)
 2. Complete casing and cementing information. (Shall include cementing receipts, volumes, cement bond logs, and joint lengths.)

Kansas Permit Number:

3. Chemical analysis of the formation fluid in the receiving disposal formation.
4. Casing and tubing pressure test results after completion of the well.
5. A schematic drawing showing well completion if it differs from that shown in the well construction diagram that accompanied your application.
6. Proposed formation testing program to determine the formation properties including formation temperature, fracture pressure and the physical or chemical characteristics of the injection matrix.
7. Top hole elevation of the disposal well, with a closed traverse from U.S.G.S. or approved bench mark tied to the U.S.G.S. bench mark system.
8. A spill prevention and containment plan.

II. INJECTION LIMITATIONS AND MONITORING REQUIREMENTS

- A. The permittee is authorized to inject process wastewater originating from manufacturing activities as specified in the application for this permit. Such injection in the disposal well shall be controlled, limited, and monitored by the permittee as specified below. All reports are to be submitted to the department not later than fourteen days after the last day of the month in which such reports are due.
- B. The pH of injected liquids shall be maintained between 2.0 and 12.5. Only gravity pressure at the well head is to be used for injection.
- C. Monitoring Requirements:
 1. Daily Measurements - Report Monthly
 - a. Temperature of injection fluids prior to injection
 - b. Volume of flow - GPD (date and time recorded)
 - c. Rate flow - GPM
 - d. Annulus pressure reading
 - e. Well head vacuum reading
 - f. Person in charge of making readings

Kansas Permit Number:

2. Weekly Analysis of Fluids to be Injected - Report Monthly
 - a. pH
 - b. Total Organic Carbon
 - c. Total Organic Halogens
 - d. Chlorides
3. Quarterly Analysis of Fluids to be Injected - Report Quarterly
 - a. 2,5-Dimethylpyrazine
 - b. 3(N,N-Dimethylamino) Propyl nitrile
 - c. Aniline
 - d. Cyclohexylamine
 - e. Dicyclohexylamine
 - f. N(3 Aminopropyl) Cyclohexylamine
 - g. N,N-Dimethylcyclohexylamine
 - h. N-Methyldicyclohexylamine
 - i. N-Methylcyclohexylamine
 - j. O-Toluidine
 - k. Pentamethyldipropylenetriamine
 - l. Piperidine
 - m. Pyridine
 - n. Sulfate
 - o. Acrylonitrile
 - p. Isophorone
4. Annual Report
 - a. Static fluid level of the Arbuckle formation °
 - b. Mechanical integrity test (every five years)
5. Special Reporting Requirements
 - a. Any well treatment procedures used, including those associated with normal maintenance and malfunction correction
 - b. Notice of abandonment and report of plugging

Kansas Permit Number:

- c. Immediate notification of the department, if annulus pressure reduction is 50% or more
- d. Immediate notification of the department of all spills associated with operation of the injection well

E. Standard Conditions

In addition to the specified conditions aforementioned, the permittee shall comply with the standard conditions which follow (Standard Conditions for Underground Injection Control Permits).

F. Departmental Review

Monitoring analyses and permit specifications will be reviewed annually by the department to insure compliance of the permit conditions.

Kansas Permit Number:

DRAFT

DATE _____

KANSAS UNDERGROUND INJECTION
CONTROL PERMIT

Pursuant to the provisions of Kansas Statutes Annotated (65-164, 65-165, 65-166, 65-170g and 65-171d),

Owner: Air Products Manufacturing Corporation

Owner's Address: Box 538
Allentown, Pennsylvania 18105

Telephone No.: 215-398-4911/8709

Facility Name: Air Products and Chemicals, Inc.

Facility Location: Wichita, Kansas

Well Location: NW SE NE 33-T28S-R1W
Sedgwick County (Well No. 2)

Receiving Formation: Arbuckle

is authorized to inject liquid wastes from this facility, in accordance to the construction and monitoring requirements as set forth herein.

This permit shall become effective _____, will supersede all previous permits and/or agreements in effect between the Kansas Department of Health and Environment and the permittee, and will expire _____. The term of this permit shall not exceed ten years.

FACILITY DESCRIPTION:

Chemical manufacturer producing organic chemicals. Waste stream contains various reactants, products, additives, and by-products associated with the processes. The major constituents are amines, cyclohexanol, cyclohexanone and acetates. The waste stream does not exhibit any hazardous waste characteristics described in 40 CFR Subpart C.

Secretary, Kansas Department of
Health and Environment

Date

Kansas Permit Number:

INJECT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to inject industrial waste water or groundwater as specified in the application for this permit. The injection fluid concentrations and the rate of injection shall become effective on the date(s) specified herein. Such injection in the disposal well shall be controlled, limited and monitored by the permittee as specified. Monitoring reports shall be submitted monthly for each well.

	<u>INJECTION LIMITATIONS</u>	<u>MONITORING REQUIREMENTS</u>
<u>Injection Parameter(s)</u>		
pH	2-12.5	Weekly (Quarterly Average and maximum for concentrations and quantities)
Total Organic Carbon	35,000 mg/l	Weekly "
Total Organic Halogens	10 mg/l	Weekly "
Chloride	No limit	Weekly "
Temperature	Ambient	Daily "

STANDARD CONDITIONS

In addition to the specified conditions stated herein, the permittee shall comply with the attachment Part I.

SCHEDULE OF COMPLIANCE

All reports are to be submitted no later than 14 days following the last day of the month.

Kansas Permit Number:

OTHER REQUIREMENTS

I. CONSTRUCTION REQUIREMENTS

- A. Borehole, casing, tubing, and cement specifications for disposal well. (Surface casing and protective casing must be new and cemented bottom to top by circulating.)

<u>Bore Hole Size and Interval</u>	<u>Casing or Tubing Size and Material</u>	<u>Weight lbs/ft</u>	<u>Casing Seat Depth</u>	<u>Type of Cement</u>	<u>No. of Sacks of Cement</u>
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- B. Corrosion Protection: Diesel fuel in annulus between 5-1/2 inch tubing string and 8-1/2 inch long casing string. Annulus pressure: 150-200 psi.
- C. Spill prevention and containment plan to be employed during the operation of the disposal well:
1. A study is being conducted to determine if any surface retention facilities are needed.
 2. A surge tank may be needed to equalize flow during periods of high stormwater runoff.
 3. Proposed disposal well #2 will serve as an alternate well in the event of a well malfunction.
- D. This permit shall not become fully effective until the following have been received by the department:
1. A complete geologic log of the well. (May be gamma ray-neutron, electric log, or other descriptive log; not a driller's log.)
 2. Complete casing and cementing information. (Shall include cementing receipts, volumes, cement bond logs, and joint lengths.)

Kansas Permit Number:

3. Chemical analysis of the formation fluid in the receiving disposal formation.
4. Casing and tubing pressure test results after completion of the well.
5. A schematic drawing showing well completion if it differs from that shown in the well construction diagram that accompanied your application.
6. Proposed formation testing program to determine the formation properties including formation temperature, fracture pressure and the physical or chemical characteristics of the injection matrix.
7. Top hole elevation of the disposal well, with a closed traverse from U.S.G.S. or approved bench mark tied to the U.S.G.S. bench mark system.
8. A spill prevention and containment plan.

II. INJECTION LIMITATIONS AND MONITORING REQUIREMENTS

- A. The permittee is authorized to inject process wastewater originating from manufacturing activities as specified in the application for this permit. . Such injection in the disposal well shall be controlled, limited, and monitored by the permittee as specified below. All reports are to be submitted to the department not later than fourteen days after the last day of the month in which such reports are due.
- B. The pH of injected liquids shall be maintained between 2.0 and 12.5. Only gravity pressure at the well head is to be used for injection.
- C. Monitoring Requirements:
 1. Daily Measurements - Report Monthly
 - a. Temperature of injection fluids prior to injection
 - b. Volume of flow - GPD (date and time recorded)
 - c. Rate flow - GPM
 - d. Annulus pressure reading
 - e. Well head vacuum reading
 - f. Person in charge of making readings

Kansas Permit Number:

- c. Immediate notification of the department, if annulus pressure reduction is 50% or more
- d. Immediate notification of the department of all spills associated with operation of the injection well

E. Standard Conditions

In addition to the specified conditions aforementioned, the permittee shall comply with the standard conditions which follow (Standard Conditions for Underground Injection Control Permits).

F. Departmental Review

Monitoring analyses and permit specifications will be reviewed annually by the department to insure compliance of the permit conditions.